

**REMARKS / ARGUMENTS**

Claims 1-13, 15-32, and 34-40 are pending in the instant application. Claims 1, 21, and 32 have been amended, as set forth above, to further clarify the language used in these claims and to further prosecution of the present application. The Applicant respectfully submits that the claims define patentable subject matter.

Claims 1-9, 11-13, 15-18, 20-30, 32, 34, 35, 37, 39, and 40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's Admission of Prior Art ("APA") in view of USP 4,999,596 ("Nakatani") further in view of USP 6,542,724 ("Copeland"). Claims 10, 19, 31, 36, and 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Applicant respectfully traverses these rejections at least based on the following amendments and remarks.

**REJECTION UNDER 35 U.S.C. § 103**

In order for a *prima facie* case of obviousness to be established, the Manual of Patent Examining Procedure, Rev. 6, Sep. 2007 ("MPEP") states the following:

The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) noted that the

analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."

See the MPEP at § 2142, citing *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), and *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval). Further, MPEP § 2143.01 states that "the mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art" (citing *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007)). Additionally, if a prima facie case of obviousness is not established, the Applicant is under no obligation to submit evidence of nonobviousness:

The examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness.

See MPEP at § 2142.

**I. The Proposed Combination of APA, Nakatani, and Copeland Does Not Render Claims 1-9, 11-13, 15-18, 20-30, 32, 34, 35, 37, 39, and 40 Unpatentable**

**A. Independent Claims 1, 21, and 32**

With regard to the rejection of independent claim 1 under 35 U.S.C. § 103(a), the Office Action the Applicant submits that the combination of APA,

Nakatani, and Copeland does not disclose or suggest at least the limitation of "generating, in a transmitter, a local oscillator (LO) differential signal at a particular frequency, the LO differential signal being associated with a LO harmonic frequency signal disposed at a LO harmonic frequency; selecting, utilizing a harmonic trap in a differential buffer, said harmonic trap disposed at an output of said LO differential signal of said transmitter, frequency content disposed in a region around the LO harmonic frequency; and attenuating, in said transmitter, said selected frequency content disposed in said region around the LO harmonic frequency," as recited in Applicant's independent claim 1.

The Office Action states the following:

As to claims 1, 21, applicant's admitted prior art teaches generating in a transmitter, a local oscillator (LO) a signal at a particular frequency the LO signal being associated with a LO harmonic frequency signal disposed at a LO harmonic frequency (Fig.1, Fig.2, par [0004-0013]); selecting in transmitter frequency content disposed in a region around the LO harmonic frequency and (Fig.1, Fig.2, par [0004-0013]). **Applicant's admission of prior art fails to teach attenuating in said transmitter said selected frequency content disposed in said region around the LO harmonic frequency which is taught in related art by Nakatani (See col.6, lines 28-35, abstract).** It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of the conventional transmitter taught by applicant's admission of prior art with the filter circuit as taught by Nakatani so as to attenuate the second harmonic of the local oscillator. **The combination of Applicant's admitted prior art and Nakatani fails to teach wherein LO is differential LO. Copeland teaches wherein LO is differential LO (see fig. 1, 106, col. 4, lines 31-48).** Therefore, It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Copeland into system of applicant's

admission of prior art and Nakatani for achieving tunable image rejection in radio signal processing device.

See Office Action at pages 2-3 (emphasis added). The Applicant respectfully disagrees with this analysis.

The Examiner's arguments are still deficient, because APA does not disclose or suggest the use of a harmonic trap in a differential buffer at the output of an LO differential signal to select frequency content. In addition, Nakatani also does not overcome these deficiencies of the APA. More specifically, the Examiner conceded that, "[t]he combination of Applicant's admitted prior art and **Nakatani fails to teach wherein LO is differential LO.**" See Office Action at 2 (emphasis added). Second, Nakatani discloses "a **strip-type** second-harmonic wave choking filter" which operates based on **stubs of specific lengths**. See Nakatani at col. 2, lines 30-57. That is, Nakatani does not disclose a "selecting, **utilizing a harmonic trap in a differential buffer**, said harmonic trap disposed at an output of said LO differential signal of said transmitter, frequency content disposed in a region around the LO harmonic frequency" as recited in Applicant's claim 1.

To overcome the deficiencies of the combination of APA and Nakatani, namely "selecting, utilizing a harmonic trap in a differential buffer," the Examiner refers for support to the VCO 106 in Figure 1 of Copeland. With regard to Figure 1, Copeland states the following:

The transceiver 100 includes primarily a receiver 102, a transmitter 104 and a shared Voltage-Controlled Oscillator (VCO) 106. Image

Reject Filters (IRF) 112 and 118 are integrated into the receiver 102 and the transmitter 104, respectively. An external frequency control unit 108 is coupled to the VCO 106, responsible for generating and providing to the VCO 106 a control voltage  $V_{freq}$  at output 126. Alternatively, the frequency control unit 108 may be implemented as an integral component of the transceiver 100. Differential transmission lines 144, 146 convey the Local Oscillator (LO) signal, output by the VCO 106, to mixer 114 of the receiver 102 and to mixer 122 of the transmitter 104.

See col. 2, line 64 – col. 3, line 9 (emphasis added).

Copeland discloses a differential output (128, 130) to a differential buffer without the use of a harmonic trap in a differential buffer, disposed at the output of an LO differential signal. Therefore, Copeland does not disclose “selecting, **utilizing a harmonic trap in a differential buffer, said harmonic trap disposed at an output of said LO differential signal of said transmitter**, frequency content disposed in a region around the LO harmonic frequency,” as recited in Applicant's claim 1.

Therefore, the Applicant respectfully submits that the Examiner has not provided an “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness” in the detailed manner described in *KSR*.

Accordingly, the Applicant maintains that the proposed combination of APA, Nakatani, and Copeland does not render independent claim 1 unpatentable, and a *prima facie* case of obviousness has not been established. The Applicant submits that claim 1 is allowable. Independent claims 21 and 32 are similar in many respects to the method disclosed in independent claim 1. Therefore, the Applicant

submits that independent claims 21 and 32 are also allowable over the references cited in the Office Action at least for the reasons stated above with regard to claim 1.

**B. Dependent Claims 2-13, 15-20, 22-31, and 34-40**

Dependent claims 2-13, 15-20, 22-31, and 34-40 depend directly or indirectly from independent claims 1, 21, and 32 respectively. Consequently, claims 2-13, 15-20, 22-31, and 34-40 are submitted to be allowable at least for the reasons stated above with regard to claim 1.

In general, the Office Action makes various statements regarding claims 1-40 and the cited references, which statements are now moot in light of the above. Thus, the Applicant will not address such statements at the present time. However, the Applicant expressly reserves the right to challenge such statements in the future should the need arise (e.g., if such statement should become relevant by appearing in a rejection of any current or future claim).

The Applicant also reserves the right to argue additional reasons beyond those set forth above to support the allowability of claims 1-13, 15-32, and 34-40.

**CONCLUSION**

Based on at least the foregoing, the Applicant believes that all claims 1-13, 15-32, and 34-40 are in condition for allowance. If the Examiner disagrees, the Applicant respectfully requests a telephone interview, and requests that the Examiner telephone the undersigned Attorney at (312) 775-8000.

The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

A Notice of Allowability is courteously solicited.

Respectfully submitted,

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